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CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)
2. (Canceled)
3. (Currently amended) A microfluidic optical switch comprising:
a fluid contained in a reservoir having a characteristic;
a first optical waveguide having an end located proximate said fluid;
at least one second optical waveguide having an end located proximate said fluid; and
an actuator coupled to said fluid for changing the characteristic of the fluid, wherein said characteristic is a deformable interface formed on said fluid, wherein said deformable interface is a position of a meniscus that controllably directs a light beam from said first optical waveguide to the at least one second optical waveguide.
4. (Canceled)
5. (Original) The optical switch of claim 3, wherein said actuator controls the shape of the deformable interface.
6. (Currently amended) A microfluidic optical switch comprising:
a fluid contained in a reservoir having a characteristic;
a first optical waveguide having an end located proximate said fluid;
at least one second optical waveguide having an end located proximate said fluid; and

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an actuator coupled to said fluid for changing the characteristic of the fluid, wherein said characteristic is a controllable refractive index gradient that controllably directs a light beam from said first optical waveguide to the at least one second optical waveguide.

7. (Currently amended) A microfluidic optical switch comprising:
a fluid contained in a reservoir having a characteristic;
a first optical waveguide having an end located proximate said fluid;
at least one second optical waveguide having an end located proximate said fluid; and

an actuator coupled to said fluid for changing the characteristic of the fluid, wherein said fluid further comprises a controllable refractive index gradient region that is controlled by an electric signal to direct a light beam from said first optical waveguide to the at least one second optical waveguide.

8. (Currently amended) A microfluidic optical switch comprising:
a fluid contained in a reservoir having a characteristic;
a first optical waveguide having an end located proximate said fluid;
at least one second optical waveguide having an end located proximate said fluid; and

an actuator coupled to said fluid for changing the characteristic of the fluid, wherein said fluid further comprises a controllable refractive index gradient region that is controlled by an incident light to direct a light beam from said first optical waveguide to the at least one second optical waveguide.

9. (Previously presented) The optical switch of claim 6, wherein said reservoir is a tubule.

10. (Canceled)

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11. (Previously presented) A method for operating a microfluidic optical switch comprising:
- supplying light through a first waveguide to be incident upon a fluid;
 - altering a characteristic of the fluid; and
 - directing, in response to the characteristic alteration, the light into a second waveguide, wherein said characteristic is a position of a meniscus.
12. (Previously presented) A method for operating a microfluidic optical switch comprising:
- supplying light through a first waveguide to be incident upon a fluid;
 - altering a characteristic of the fluid; and
 - directing, in response to the characteristic alteration, the light into a second waveguide, wherein said characteristic is a refractive index gradient.
13. (Original) The method of claim 12, further comprising:
- controlling said controllable refractive index gradient using an electric signal.
14. (Original) The method of claim 12, further comprising:
- controlling said controllable refractive index gradient using an incident light.
15. (Previously presented) The method of claim 12, wherein said altering step further comprises:
- activating an actuator to alter the characteristic.
16. (Previously presented) A method for operating a microfluidic optical switch comprising:
- supplying light through a first waveguide to be incident upon a fluid;
 - altering a characteristic of the fluid; and
 - directing, in response to the characteristic alteration, the light into a second waveguide, wherein said altering step further comprises:

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activating an actuator to alter the characteristic, wherein said actuator is an electrohydrodynamic actuator.

17. (Previously presented) The method of claim 12, wherein said directing step further comprises:

directing said light into one of a plurality of waveguides.

18. (New) The optical switch of claim 6, wherein said actuator comprises an electrohydrodynamic actuator.

19. (New) The optical switch of claim 6, wherein said fluid further comprises a liquid/liquid interface.